



Environmental Community Letter

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Every year Lawrence Livermore National Laboratory (LLNL) publishes a site annual environmental report. The report assesses the impact of LLNL operations on the environment. It also summarizes LLNL regulatory compliance and records results of environmental monitoring. This Environmental Community Letter offers a summary overview of the report.

The 2004 Environmental Report represents the collection and analysis of several thousand environmental monitoring samples. These samples are taken from the air, water, and wastewater of the two LLNL sites. The main site is located in Livermore, California.

The other is Site 300, an experimental test facility, located near Tracy, California. Samples are also taken from air, vegetation, wine, and soil on site and in surrounding communities.

Many different analyses are carried out on these samples. For example, there were almost 5000 groundwater samples taken in 2004. Each sample may be assessed for as many as 50 different chemicals or characteristics.

Environmental

monitoring of LLNL

operations in 2004

indicates no adverse

impact to public health

or the environment.

Specific Monitoring Activities

Air Monitoring

Sixty-eight instruments monitor air at 30 locations on the Livermore site and Site 300, throughout the Livermore Valley, and in the Tracy area. Concentrations of all monitored radionuclides and beryllium at all locations were well below levels that could endanger the environment or public health. For example, the highest concentration of plutonium found in an offsite air sampling location was 0.0019 percent of the federal standard.

Emissions of nonradioactive air pollutants from LLNL operations in 2004 also were low. For example, total nitrogen oxide emission from the Livermore site was estimated at 75.1 kilograms per day. This is about 0.11 percent of the amount released daily from all stationary sources in the Bay Area.

The Livermore Site emitted approximately 153 kilograms per day of regulated air pollutants (including nitrogen oxides, volatile organics, sulfur oxides, particulate matter and carbon monoxide. About 3.65 kilograms per day are emitted from Site 300. As an example of their impact, releases of reactive organics from the Livermore site were about 0.02 percent of the total daily emissions from stationary sources in the entire Bay Area.

Wastewater Monitoring

The Livermore site discharges about 1.25 million liters of wastewater daily to the City of Livermore sanitary sewer system. This is 4.7 percent of the total flow to the City's system.

Wastewater flow from the Livermore site to the Livermore Water Reclamation Plant (LWRP) is monitored continuously. If any significant releases of radioactivity, metals, or high or low pH water are detected, the wastewater is redirected to an on-site sewer diversion system. It is then treated and disposed of appropriately or returned to the sanitary sewer if it meets permit conditions.

There were no enforcement actions for wastewater permit violations in 2004. Discharges of radioactive materials were among the lowest values in Laboratory history.

Drinking Water Monitoring

In 2004, the maximum tritium activity measured in off-site drinking water was about 0.4 percent of the regulatory maximum contaminant level.

Gross alpha and gross beta radioactivity measurements also were well below regulatory levels of concern.

Groundwater Monitoring

In the Livermore Valley, monitored radioactive or inorganic nonradioactive constituents were significantly below primary drinking water standards in off-site wells.

Shallow groundwater in certain areas beneath Site 300 contains volatile organic compounds (VOCs), tritium, nitrate, perchlorate, high explosives, organosilicate oil, metals and depleted uranium. These present no public

ATSDR Reports

A Public Health Assessment of the Laboratory site in Livermore was completed in mid-2004 by the nation's top public health agency. The Agency completed a similar study of Site 300 in 2004 and issued the study in early 2005.

The Health Assessment of the Livermore Site found, "No Apparent Public Health Hazard" from past and ongoing operations of the Laboratory. The findings mean, "that although community exposures of site-related contaminants may have occurred or may be occurring, the resulting doses are unlikely to result in any adverse health effects and are consequently below levels of health concern."

The Health Assessment notes that, "Past and present pathways of community exposure are below levels of public health concern." Also, "The current environmental monitoring program conducted by LLNL is adequate to ensure that future releases of hazardous substances will not present a future public health hazard."

The Health Assessment for Site 300 found "no Public Health Hazard based on the fact that exposure to contaminants from the site is not occurring now, has not occurred in the past and is not expected to occur in the future."

The Health Assessments were the results of about 10 years of study by the Agency for Toxic Substances and Disease Registry (ATSDR). The Agency is part of the Centers for Disease Control of the U.S. Department of Health and Human Services. It is responsible for assessing public health impacts at U.S. Department of Energy sites undergoing environmental restoration.

In 2003, in a separate Public Health Assessment, the Agency confirmed earlier regulatory agency findings that there was no threat to human health from plutonium in old sewage sludge. The report presents a thorough public health evaluation of the sampling data (see ATSDR Public Health Assessment on Plutonium 239 Sludge at <http://www.envirinfo.llnl.gov>).

LLNL released plutonium below permitted regulatory levels to the Livermore sanitary sewer in the 1960s. The plutonium could be found at very low levels in sewage sludge made available to the public as a soil amendment.

No health risk from the plutonium in the sludge was found at that time or since. Over the years, state and federal regulatory agencies have confirmed that there is no health risk after many detailed public investigations.

health risks because the shallow groundwater is not used as a water supply source.

Soil and Sediment Monitoring

Most analyses of 2004 on-site soil samples did not detect any nonradiological contaminants that could impact public health. A few analyses detected either trace amounts of contaminants or naturally occurring background concentrations. Radiological results were within the very low levels of previous years. Elevated concentrations of depleted uranium continue to be found at some locations within Site 300. Findings are within the ranges seen in the past and present no threat to employees or the public.

Off-Site Vegetation and Wine Monitoring

In general, off-site monitoring for tritium in vegetation found none. Tritium in local wine was up to 10 times lower than in some French wine.

As usual, there was slightly more tritium near the Livermore site than was found at more distant locations. All tritium found was well below regulatory levels of concern, even with organically bound tritium taken into account.

Groundwater Remediation

As of 2004, groundwater treatment facilities at the Livermore site have processed almost 10 billion liters of groundwater since 1989. More than 1700 kilograms of VOCs were removed during groundwater and soil vapor treatment in that period.

Since treatment began at Site 300, about 1.1 billion liters of groundwater have been treated. Almost 300 kilograms of VOCs have been removed from soil and groundwater.

Waste Minimization and Pollution Prevention

Thanks to strong pollution prevention efforts, waste generation at LLNL generally continues to decrease. LLNL received two Best In Class Awards from the Federal government in early 2005. The awards were for waste minimization activities in 2004. LLNL also took a Bronze Award in the Federal Challenge for its management of waste electronic equipment.

Total routine and nonroutine waste diverted from landfills for recycling in 2004 was 16,765 metric tons. This includes almost 17 tons of toner cartridges, 329 tons of paper and 39 tons of batteries.

Radiological Dose Assessment

Every year a theoretical radiological dose from LLNL to the public is calculated. The dose is based upon someone living for a year on the LLNL fence line where the highest radiation dose from air releases would occur. That dose was 0.0079 millirem in 2004 for the Livermore site. For Site 300 it was 0.026 millirem.

The total theoretical 2004 dose from both sites added together is almost 9,000 times smaller than dose everyone receives from background radiation in the natural environment.

An average individual receives an annual dose of about 360 millirem from radiation present normally and naturally in the environment and from medical sources. Federal exposure standards for air releases limit the annual dose an individual can receive from federal facility operations to 10 millirem. LLNL has never exceeded these Federal standards.

Regulatory Compliance

LLNL must meet all applicable federal, state, regional, county, and local environmental requirements. For example, in 2004, the Bay Area Air Quality Management District issued or

Disclosure Letter

Buying or selling a home or property near the Laboratory?

You will find a letter of disclosure at <http://www-envirinfo.llnl.gov/>.

The letter meets state requirements for disclosure of the Laboratory's impact on the environment; there are no impacts on public health.

renewed about 178 operating permits for the Livermore site. The San Joaquin Valley Air Pollution Control District issued or renewed permits for 40 air emissions sources at Site 300.

LLNL also has permits for medical waste, hazardous waste treatment and storage, underground storage tanks, and for discharge of treated groundwater, industrial and sanitary sewage, and storm water. Site 300 has additional permits for inactive landfills, cooling tower discharges, operation of a sewer lagoon, septic tanks, and leach fields.

Numerous federal, state and area regulatory agencies conduct inspections at both Livermore and Site 300. There were no violations in 2004 that caused an impact to human health or to the environment.

Endangered Species

LLNL meets the requirements of various federal and state regulatory acts covering endangered or sensitive natural resources. In 2004, monitoring and stewardship of the California red-legged frog continued at the Livermore site. Biological surveys were conducted for special status species at Site 300. There were no San Joaquin kit fox found but American badgers were seen. Swainson's hawks and willow flycatchers also were found. Seven

uncommon and rare plant populations continue to be monitored at the site—so are the California red-legged frog, Alameda whipsnake, California tiger salamander and various bird species.

What is an Annual Environmental Report?


Among the agencies working with the Laboratory to protect public health and the environment are the U.S. Environmental Protection Agency, regional air and water boards, and the California Department of Toxic Substances Control.

These agencies, as well as the U.S. Department of Energy (DOE), National Nuclear Security Administration, and the University of California, oversee LLNL operations and monitor any impacts that LLNL operations may have on the public or the environment.

Environmental monitoring data collected (and the related modeling, analysis, and conclusions) are presented to regulatory agencies throughout the year. These data and the related analyses are made available to the public in the annual environmental report.

The Environmental Report 2004 is available at the LLNL environmental repositories in the Livermore Public Library and Tracy Public Library. You may also read it on the Web at <http://www-envirinfo.llnl.gov/> under Site Annual Environmental Report.

Please call (925) 424-4599 with any questions.



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